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| 10/826,816 | 04/15/2004 | Thomas L. Credelle | 03424.P053D | 1581 |
| <div>7590 01/17/2008</div> <div>James C. Scheller, Jr. BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP Seventh Floor 12400 Wilshire Boulevard Los Angeles, CA 90025-1026</div> | | | | |
| | | | <div>EXAMINER</div> <div>MCCLELLAND, KIMBERLY KEIL</div> | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|---|--|--|
| Office Action Summary | Application No. 10/826,816 | Applicant(s) CREDELLE ET AL. | |
| | Examiner Kimberly K. McClelland | Art Unit 1791 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) 48-53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All. b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/07 has been entered.

Response to Amendment

2. Applicant is reminded they need to explicitly point out where support for all the newly claimed features comes from as required by MPEP 714.02 and 2163.06. See 37 CFR 1.111.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claims 23 and 25-27 must be shown or the feature(s) canceled from the claim(s). For example, contradictory to claim 23, Figures 12B and 22 show a carrier removed at a station separate from the substrate forming station. Figure 12B also shows forming vias in the top side of the functional layer, contradictory to claim 26. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,742,561 to Nam et al. in view of U.S. Patent No. 5,904,545 to Smith et al.

6. With respect to claim 28, Nam et al. discloses an apparatus for die bonding, including a relocating tool (56) having a first plurality of receptor sites having a plurality of functional blocks (72) deposited therein; and a transfer tool (52/54) coupling to an adhesive layer (68); said transfer tool to transfer said plurality of functional blocks (72) from said relocating tool to a substrate (60) wherein said plurality of functional blocks adhere to said adhesive layer (See Figure 4). However, Nam et al. does not specifically disclose the receptor site is a recessed region designed to closely fit at least a portion of a single functional block.

7. Smith et al. discloses an apparatus for fabricating micro-structures, including the receptor site is a recessed region designed to closely fit at least a portion of a single functional block (See Figures 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the recessed receptor sites taught by Smith et al. with the relocation tool disclosed by Nam et al. The motivation would have been to improve alignment of the functional blocks on the relocation tool (column 10, lines 47-57).

8. As to claim 29, Nam et al. discloses a vacuum source (6) coupling to said transfer tool (52/54), said vacuum source adheres said adhesive layer (68) to said transfer tool (See Figures 5C-5D).

9. Claims 1, 3, and 6-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,742,561 to Nam et al. in view of U.S. Patent No. 6,511,048 to Bayan et al. and U.S. Patent No. 5,904,545 to Smith et al.

10. With respect to claim 1, Nam et al. discloses an apparatus for die bonding, including a relocating tool (56) having a first plurality of receptor sites having a plurality of functional blocks (72) deposited therein; and a transfer tool (54), said transfer tool being able to remove said plurality of functional blocks (72) from said relocating tool (56) and deposit said plurality of functional blocks (72) into a second plurality of receptor sites in said substrate (68; See Figure 4). However, Nam et al. does not specifically disclose a plurality of nozzles on the transfer tool or the receptor site is a recessed region designed to closely fit at least a portion of a single functional block.

11. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Nam et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

12. Smith et al. discloses an apparatus for fabricating micro-structures, including the receptor site is a recessed region designed to closely fit at least a portion of a single

functional block (See Figures 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the recessed receptor sites taught by Smith et al. with the relocation tool disclosed by Nam et al. The motivation would have been to improve alignment of the functional blocks on the relocation tool (column 10, lines 47-57).

13. As to claim 3, Nam et al. discloses an adhesive dispensing device (74) to dispense adhesive (68) into said second plurality of receptor sites in said substrate before said plurality of functional blocks are deposited into said second plurality of receptor sites (See Figure 4).

14. As to claim 6, Nam et al. discloses second plurality of receptor sites (24) being configured to mate with said plurality of functional blocks (25; See Figure 2).

15. As to claim 7, Nam et al. discloses said plurality of receptor sites have any one of a trapezoidal shape, a rectangular shape, a square shape, and a cylindrical shape (See Figure 4).

16. The shape of the functional blocks is interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

17. As to claim 8, Nam et al. does not specifically disclose asymmetrically shaped receptor sites. The shape of the functional blocks is not given patentable weight.

18. Smith et al. discloses an apparatus for fabricating micro-structures, including it is known in the art to use any shaped receptor sites (column 13, lines 46-56). Examiner asserts the disclosure of "any block having shaped features" teaches blocks are not limited to symmetrical shapes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute asymmetrical shaped receptor sites for symmetrical blocks, because the different shapes are functional equivalents.

Substitution of equivalents requires no express motivation. In re Fount, 213 USPQ 532 (CCPA 1982); In re Siebentritt 152, USPQ (CCPA 1967).

19. As to claim 9, Nam et al. does not specifically disclose transfer tool (54) is further coupled to a vacuum source conveying vacuum to said nozzles. However, the similar transfer tool of Nam et al. (52) is disclosed as being operated by a vacuum (column 4, lines 30-43). Examiner asserts it would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the second transfer tool of Nam et al. under vacuum. The motivation would have been to temporarily constrain the die during transport.

20. As to claim 10, Nam et al. discloses all of said first plurality of receptor sites have same dimensions and shapes (See Figure 4).

21. As to claim 11, Nam et al. does not specifically disclose said first plurality of receptor sites comprises of different size and shape receptor sites.

22. Bayan et al. discloses an off-load system for semiconductor devices, including said first plurality of receptor sites comprises of different size and shape receptor sites (column 5, lines 29-50). It would have been obvious to one of ordinary skill in the art at

the time the invention was made to combine the different size and shape receptor sites taught by Bayan et al. with the receptor sites of Nam et al. The motivation would have been to allow various sized blocks to be positioned in various orientations.

23. As to claim 12, Nam et al. discloses said plurality of nozzles has a dimension that is smaller than a dimension of said plurality of functional blocks (See Figure 5C).

24. As to claim 13, Nam et al. does not specifically disclose said plurality of functional blocks are deposited in said relocating tool by an FSA device using a slurry to deposit said plurality of functional blocks into said plurality of receptor sites.

25. Smith et al. discloses an apparatus for fabricating microstructures, including said plurality of functional blocks are deposited in said relocating tool by an FSA device using a slurry to deposit said plurality of functional blocks into said plurality of receptor sites (column 11, lines 5-8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the FSA depositing step of Smith et al. for the wafer of Nam et al. The motivation would have been to provide evenly spaced and aligned blocks and allow for devices that are not in wafer form.

26. As to claim 14, Nam et al. discloses a drying device (column 4, lines 55-56).

27. As to claim 15, Nam et al. discloses a curing device (column 1, lines 59-62).

28. As to claim 16, Nam et al. discloses a relocating tool having a first plurality of receptor sites (56) having a plurality of functional blocks (72) deposited therein; a transfer tool (54), said transfer tool being able to remove said plurality of functional blocks (72) from said relocating tool (56) and deposit said plurality of functional blocks into said substrate (68) wherein said substrate is made out of a thermoset material

(column 2, lines 7-14; See Figure 4). However, Nam et al. does not specifically disclose a plurality of nozzles on the transfer tool or the receptor site is a recessed region designed to closely fit at least a portion of a single functional block.

29. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Nam et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

30. Smith et al. discloses an apparatus for fabricating micro-structures, including the receptor site is a recessed region designed to closely fit at least a portion of a single functional block (See Figures 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the recessed receptor sites taught by Smith et al. with the relocation tool disclosed by Nam et al. The motivation would have been to improve alignment of the functional blocks on the relocation tool (column 10, lines 47-57).

31. The circuitry components of the functional blocks are interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability

of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

Consequently, this limitation has not been given patentable weight.

32. Also, the phrase, "wherein said substrate is hot when said plurality of functional blocks are being deposited" is considered functional language. The examiner would like to note that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. Examiner has found the phrase, "wherein said substrate is hot wherein said plurality of functional blocks are being deposited" Does not provide any structural limitations to the current apparatus.

33. As to claim 17, Nam et al. discloses a heating device capable of heating said substrate to above a softening point (column 2, lines 25-30).

34. Claims 1, 9, 12, and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,765,277 to Jin et al. in view of U.S. Patent No. 6,511,048 to Bayan et al. and U.S. Patent No. 5,904,545 to Smith et al.

35. With respect to claim 1, Jin et al. discloses a die bonding apparatus, including a relocating tool (50) having a first plurality of receptor sites having a plurality of functional blocks (57) deposited therein; and a transfer tool (60), said transfer tool being able to remove said plurality of functional blocks (57) from said relocating tool (50) and deposit said plurality of functional blocks (57) into a second plurality of receptor sites in said substrate (55; See Figure 5). However, Jin et al. does not specifically disclose a plurality of nozzles on the transfer tool or the receptor site is a recessed region designed to closely fit at least a portion of a single functional block.

36. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

37. Smith et al. discloses an apparatus for fabricating micro-structures, including the receptor site is a recessed region designed to closely fit at least a portion of a single

functional block (See Figures 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the recessed receptor sites taught by Smith et al. with the relocation tool disclosed by Jin et al. The motivation would have been to improve alignment of the functional blocks on the relocation tool (column 10, lines 47-57).

38. As to claim 9, Jin et al. does not specifically disclose transfer tool (54) is further coupled to a vacuum source conveying vacuum to said nozzles. However, the similar transfer tool of Jin et al. (52) is disclosed as being operated by a vacuum (column 4, lines 30-43). Examiner asserts it would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the second transfer tool of Jin et al. under vacuum. The motivation would have been to temporarily constrain the die during transport.

39. As to claim 12, Jin et al. discloses said plurality of nozzles has a dimension that is smaller than a dimension of said plurality of functional blocks (See Figure 6).

40. As to claim 16, Jin et al. discloses a relocating tool having a first plurality of receptor sites (50) having a plurality of functional blocks (57) deposited therein; a transfer tool (51), said transfer tool being able to remove said plurality of functional blocks (57) from said relocating tool (50) and deposit said plurality of functional blocks into said substrate (55) wherein said substrate is made out of a thermoset material (column 1, lines 44-56; See Figure 5). However, Jin et al. does not specifically disclose a plurality of nozzles on the transfer tool or the receptor site is a recessed region designed to closely fit at least a portion of a single functional block.

41. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

42. Smith et al. discloses an apparatus for fabricating micro-structures, including the receptor site is a recessed region designed to closely fit at least a portion of a single functional block (See Figures 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the recessed receptor sites taught by Smith et al. with the relocation tool disclosed by Jin et al. The motivation would have been to improve alignment of the functional blocks on the relocation tool (column 10, lines 47-57).

43. The circuitry components of the functional blocks are interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

44. Also, the phrase, "wherein said substrate is hot wherein said plurality of functional blocks are being deposited" is considered functional language. The examiner would like to note that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. Examiner has found the phrase, "wherein said substrate is hot wherein said plurality of functional blocks are being deposited" Does not provide any structural limitations to the current apparatus.

45. As to claim 17, Jin et al. discloses a heating device capable of heating said substrate to above a softening point (column 1, lines 44-56).

46. As to claim 18, Jin et al. discloses a curing device to cure said substrate (column 1, lines 44-56).

47. As to claim 19, Jin et al. discloses a transfer tool (51/53), said transfer tool to remove a plurality of functional blocks (57) formed on a first substrate (50) from said first substrate; a transfer station to invert (52) said plurality of functional blocks; and wherein

said transfer tool (51/53) to pick up inverted functional blocks and deposit said inverted functional blocks onto a second substrate having a plurality of receptor sites (column 4, lines 23-30; See Figure 5). However, Jin et al. does not specifically disclose a plurality of nozzles on the transfer tool or the receptor site is a recessed region designed to closely fit at least a portion of a single functional block.

48. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

49. Smith et al. discloses an apparatus for fabricating micro-structures, including the receptor site is a recessed region designed to closely fit at least a portion of a single functional block (See Figures 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the recessed receptor sites taught by Smith et al. with the relocation tool disclosed by Jin et al. The motivation would have been to improve alignment of the functional blocks on the relocation tool (column 10, lines 47-57).

50. As to claim 20, Jin et al. discloses a second transfer tool (53) is used to pick up a inverted functional blocks and deposit said inverted blocks onto said second substrate having a plurality of receptor sites (See Figure 5). However, Jin et al. does not specifically disclose a plurality of nozzles on the second transfer tool.

51. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

52. As to claim 21, Jin et al. does not specifically disclose said plurality of receptor sites has a matching pattern with said plurality of nozzles on said transfer tool.

53. Bayan et al. discloses an off-load system for semiconductor devices, including said plurality of receptor sites (40) has a matching pattern with said plurality of nozzles on said transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the matching nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would

have been to allow for simultaneous transfer of multiple devices with proper alignment, thus improving unit output.

54. As to claim 22, Jin et al. does not specifically disclose said plurality of receptor sites has a matching pattern with said another plurality of nozzles on said another transfer tool.

55. Bayan et al. discloses an off-load system for semiconductor devices, including said plurality of receptor sites (40) has a matching pattern with said another plurality of nozzles on said another transfer tool. J (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the matching nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would have been to allow for simultaneous transfer of multiple devices with proper alignment, thus improving unit output.

56. Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,742,561 to Nam et al. in view of U.S. Patent No. 6,511,048 to Bayan et al. and U.S. Patent No. 5,904,545 to Smith et al. as applied to claims 1, 3, and 6-17 above, and further in view of U.S. Patent No. 6,193,136 to Higashi et al.

57. With respect to claim 2, Nam et al. does not disclose a vibration device coupling to said transfer tool to agitate said transfer tool as said plurality of functional blocks are being deposited into said second plurality of receptor sites.

58. Higashi et al. discloses a component mounting apparatus, including a vibration device coupling to said transfer tool to agitate said transfer tool as said plurality of functional blocks are being deposited into said second plurality of receptor sites (column 7, lines 33-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the vibratory device taught by Higashi et al. with the transfer tool disclosed by Nam et al. The motivation would have been to allow for ultrasonic bonding (column 3, lines 25-29).

59. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,742,561 to Nam et al. in view of U.S. Patent No. 6,511,048 to Bayan et al. and U.S. Patent No. 5,904,545 to Smith et al. as applied to claims 1, 3, and 6-17 above, and further in view of U.S. Patent No. 6,261,871 to Langari et al.

60. With respect to claim 4, Nam et al. does not specifically disclose a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites.

61. Langari et al. discloses an apparatus for making flip-chips, including a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites (column 8, lines 5-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the liquid dispensing device taught by Langari et al. with the apparatus disclosed by Nam et al.

The motivation would have been to remove any contaminants and produce a stronger adhesion between the substrate and functional elements (column 8, lines 5-13).

62. As to claim 5, Nam et al. discloses an adhesive dispensing device (74) to dispense adhesive (68) into said second plurality of receptor sites in said substrate before said plurality of functional blocks are deposited into said second plurality of receptor sites (See Figure 4). However, Nam et al. does not specifically disclose a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites.

63. Langari et al. discloses an apparatus for making flip-chips, including a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites (column 8, lines 5-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the liquid dispensing device taught by Langari et al. with the apparatus disclosed by Nam et al. The motivation would have been to remove any contaminants and produce a stronger adhesion between the substrate and functional elements (column 8, lines 5-13).

64. Claims 23 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,765,277 to Jin et al. in view of U.S. Patent No. 6,511,048 to Bayan et al. and U.S. Patent No. 6,830,946 to Yanagisawa et al.

65. With respect to claim 23, Jin et al. discloses a die bonding apparatus, including a transfer tool (51), said transfer tool to remove a plurality of functional blocks (57) formed on a first substrate from said first substrate and to transfer said plurality of functional blocks from said first substrate to the top side of a functional layer (i.e. tape; column 1, lines 44-57; See Figure 5). However, Jin et al. does not specifically disclose a plurality of nozzles on the transfer tool, a carrier on the bottom side of the functional layer, forming a second substrate, or detaching the carrier.

66. Bayan et al. discloses an off-load system for semiconductor devices, including using multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the plurality of nozzles in the transfer tool taught by Bayan et al. in the transfer tool of Jin et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

67. Yanagisawa et al. discloses device transfer panel, including a carrier (5) on the opposite side of the functional layer (6), forming a second substrate (11), and detaching the carrier (5; See Figures 1A-3C). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the carrier and second substrate taught by Yanagisawa et al. with the apparatus of Jin et al. The motivation

would have been to provide support for the functional layer prior to attachment and provide further protection for the electronic article.

68. As to claim 25, the composition of the functional layer composition is interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

69. As to claim 26, Jin et al. does not specifically disclose a pattern vias forming station for forming contact vias created in the bottom side of the photopatternable layer for electrical interconnections to the plurality of blocks.

70. Yanagisawa et al. discloses device transfer panel, including a pattern vias forming station for forming contact vias created in the bottom side of the photopatternable layer for electrical interconnections to the plurality of blocks (5; See Figures 4A-4C). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide vias in the functional layer as taught by Yanagisawa et al. The motivation would have been to provide electrical connection between the functional block and substrate, allowing the resulting device to function.

71. As to claim 27, the composition of the functional layer composition is interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

72. The current application being a continuation-in-part of an earlier U.S. application or international application containing subject matter not supported by the original application. Any claims in the new application not supported by the specification and claims of the parent application have an effective filing date equal to the filing date of the new application. Any claims which are fully supported under 35 U.S.C. 112 by the earlier parent application have the effective filing date of that earlier parent application.

Response to Arguments

73. Applicant's arguments with respect to claims 1-23 and 25-29 have been considered but are moot in view of the new ground(s) of rejection. Applicant's remaining pertinent remarks are addressed below:

74. As to applicant's argument that the wafer table (56) of Nam is not a tool, examiner disagrees. The Merriam Webster Online dictionary defines the term "tool" as "something (as an instrument or apparatus) used in performing an operation or necessary in the practice of a vocation or profession". As applicant has not provided any alternative definitions for this term, the commonly accepted definition will be used by examiner. Applicant has not presented any distinguishing features to differentiate a wafer from a tool. The wafer table of Nam acts as a source of functional blocks located at individual sites for relocation, as required by applicant's independent claim 1. As to applicant's argument that Nam does not teach receptor "sites", examiner disagrees. The Merriam Webster Online dictionary defines the term "sites" as "the spatial location of an actual or planned structure or

set of structures". Consequently, the physical locations of the functional blocks (72) of Nam on the wafer table (56) are interpreted as meeting applicant's claimed "receptor sites". An applicant is entitled to be his or her own lexicographer and may rebut the presumption that claim terms are to be given their ordinary and customary meaning by clearly setting forth a definition of the term that is different from its ordinary and customary meaning(s). See *In re Paulsen*, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994). Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999). The terms "tool" and "receptor sites" are broad, and must be interpreted as such. Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

75. Applicant's current amendment is sufficient to overcome the previous rejections under 35 U.S.C. 102 and 103. However, new rejections under 35 U.S.C. 103 have been issued.

Conclusion

76. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6,555,408 to Jacobsen et al. discloses a similar method of transferring elements.

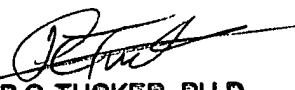
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly K. McClelland whose telephone number is (571) 272-2372. The examiner can normally be reached on 8:00 a.m.-5 p.m. Mon-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip C. Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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